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(54) Title: METHODS OF APPLYING A SORBENT COATING ON A SUBSTRATE, A SUPPORT, AND/OR A SUBSTRATE COATED WITH A SUPPORT

(57) Abstract: Methods of applying a sorbent coating on a substrate, a support, and/or a substrate coated with a support are described. One of the methods comprises: (i) optionally, preparing the substrate coated with the support by pre-treating the substrate with a slurry, wherein the slurry comprises: a. solvent, b. a binder, c. the support, and d. optional dispersant; and (ii) treating the substrate, the support, and/or the substrate coated with the support, with a sorbent; wherein the substrate is (a) a monolithic or honeycomb structure made of ceramic, metal, or plastic; (b) a polyurethane foam, a polypropylene foam, a polyester foam, a metal foam, or a ceramic foam; or (c) woven or non-woven plastic or cellulosic fibers, wherein the support is alumina, silica, silica-alumina, titania, zirconia, carbon, zeolite, metal-organic framework (MOF), or combinations thereof, and wherein the sorbent adsorbs carbon dioxide and the sorbent is selected from the group consisting of amines; monoethanolamine; diethanolamine; polyethylenimine (PEI); aminopropyltrimethoxysilane; polyethyleneimine-trimethoxysilane; amide or amine containing polymers including nylon, polyurethane, polyvinylamine, or melamine; and combinations thereof.



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